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PRESENTATION

3845: Integrating community ecology theories for sustaining the development of effective management of invasive pests

Friday, September 30, 2016 09:45 AM - 10:00 AM

Convention Center - Room W240 B

Introduction: Biological control often relies on the simultaneous use of several biocontrol agents (e.g. parasitoids and generalist predators) on shared or separate prey, and direct and indirect interactions may reduce overall efficacy of biological control. Additionally, biological control based on omnivorous predators might be influenced by plant-provided food sources. Therefore, identification of such trophic links is of primary importance to the success of biological control programs. How populations interact in a multi-food sources and multi-predators agro-ecosystems is one of the fundamental questions in ecology, and is crucial to the current efforts to increase agroecosystem biodiversity.

Methods: I present a summary of research activities aiming at identifying direct and indirect interaction patterns that underpin invasive pest biological control efficiency. Cage experiments in greenhouses (mesocosms) allowed recording population dynamics in different associations of pest and natural enemy species, and laboratory experiments (microcosms) allowed understanding precisely the behaviors and mechanisms at play. The studies focus on the biological control of *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae), the invasive tomato leafminer.

Results/Conclusion: Results outlined a major role of indirect interactions on population dynamics and unexpected interactions between species, such as kleptoparasitism. We observed that the highest diversity provides the best control when using biological control agents.

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